

CLAIMS

What is claimed is:

1 50307 1. A method for optimizing a computer program comprising a child procedure and a
2 parent procedure, wherein the parent procedure comprises at least one statement that invokes the
3 child procedure, wherein the method comprises:

4 saving register-pressure data from the execution of a first compilation; and
5 making at least one inlining decision using the register-pressure data during a second
6 compilation.

1 2. The method of claim 1, wherein the register-pressure data further comprises:
2 a maximum register-pressure occurring in each procedure in the computer program.

3 3. The method of claim 2, wherein the register-pressure data further comprises:
4 a site register-pressure comprising a register pressure at each call site in the computer
5 program that is a potential inlining candidate.

6 4. The method of claim 1, wherein the making step further comprises:
7 inlining the child procedure of the computer program into the parent procedure, in place
8 of the statement that invokes the child procedure.

9 5. The method of claim 3, wherein the making step further comprises:
10 when deciding whether to inline the child procedure into the parent procedure,
11 determining whether a sum of the maximum register-pressure and the site register-pressure
12 exceeds a number of available registers.

1 6. The method of claim 5, further comprising:
2 when the determining step is true, refraining from inlining the child procedure into the
3 parent procedure.

1 7. The method of claim 5, further comprising:
2 when the determining step is false, inlining the child procedure into the parent procedure
3 in place of the statement that invokes the child procedure.

1 8. The method of claim 7, further comprising:
2 setting the maximum register-pressure of the parent procedure to be a maximum of its
3 existing value or the sum of the maximum register-pressure of the child procedure and the site
4 register-pressure.

1 9. A computer system for compiling a computer program including a child procedure and
2 a parent procedure which includes one or more statements that invoke the child procedure, into a
3 machine-readable representation, the computer system comprising:

4 an optimizer that optimizes the computer procedure into an optimized
5 representation, the optimizer saving register-pressure data from the execution of a first
6 compilation, and making at least one inlining decision using the register-pressure data
7 during a second compilation; and

8 a machine-readable code generator that generates a machine-readable
9 representation of the computer procedure from the optimized representation.

1 10. The computer system of claim 9, wherein the register-pressure data further comprises:
2 a maximum register-pressure occurring in each procedure in the computer program.

1 11. The computer system of claim 10, wherein the register-pressure data further
2 comprises:
3 a site register-pressure comprising a register pressure at each call site in the computer
4 program that is a potential inlining candidate.

1 12. The computer system of claim 9, wherein the optimizer further comprises:
2 inlining the child procedure of the computer program into the parent procedure, in place
3 of the statement that invokes the child procedure.
4

5 13. The computer system of claim 11, wherein the optimizer further comprises:
6 when deciding whether to inline the child procedure into the parent procedure,
7 determining whether a sum of the maximum register-pressure and the site register-pressure
8 exceeds a number of available registers.
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1 14. The computer system of claim 13, wherein the optimizer further comprises:
2 when the determining step is true, refraining from inlining the child procedure into the
3 parent procedure.
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1 15. The computer system of claim 13, wherein the optimizer further comprises:
2 when the determining step is false, inlining the child procedure into the parent procedure
3 in place of the statement that invokes the child procedure.
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1 16. The computer system of claim 15, wherein the optimizer further comprises:
2 setting the maximum register-pressure of the parent procedure to be a maximum of its
3 existing value or the sum of the maximum register-pressure of the child procedure and the site
4 register-pressure.
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

503 937

1 17. A program product for optimizing a computer program that includes a child procedure
2 and a parent procedure that comprises at least one statement that invokes the child procedure,
3 comprising:
4 an optimizer that saves register-pressure data from the execution of a first compilation,
5 and
6 makes at least one inlining decision using the register-pressure data during a second
7 compilation; and
8 signal-bearing media bearing the optimizer.

1 18. The program product of claim 17, wherein the register-pressure data further
2 comprises:
3 a maximum register-pressure occurring in each procedure in the computer program.

1 19. The program product of claim 18, wherein the register-pressure data further
2 comprises:
3 a site register-pressure comprising a register pressure at each call site in the computer
4 program that is a potential inlining candidate.

1 20. The program product of claim 17, wherein the optimizer further:
2 inlines the child procedure of the computer program into the parent procedure, in place of
3 the statement that invokes the child procedure.

1 21. The program product of claim 19, wherein the optimizer further:
2 when deciding whether to inline the child procedure into the parent procedure, determines
3 whether a sum of the maximum register-pressure and the site register-pressure exceeds a number
4 of available registers.

